

What is claimed is:

1. An optical assembly, comprising:

a laser diode for emitting light within a predetermined wavelength range

at a temperature by providing a driving signal thereto;

5 a temperature sensor for sensing said temperature of said laser diode;

a heater for simulating a self-heating of said laser diode by providing a supply current before said driving signal to said laser diode is provided ; and

a thermoelectric cooler for controlling said temperature of said laser diode, said thermoelectric cooler mounting said laser diode, said temperature sensor and
10 said heater thereon.

2. The optical assembly according to claim 1, wherein said thermoelectric cooler is a Peltier element.

15 3. The optical assembly according to claim 1, further includes a first terminal, a second terminal, a third terminal and an inductor,

wherein said laser diode is arranged between said first terminal and said second terminal, and said heater is arranged between said first terminal and said third terminal, and

20 wherein said driving signal is provided to said second terminal and said supply current is provided from said third terminal.

4. The optical assembly according to claim 1, further includes a first terminal, a second terminal, a third terminal and an inductor,

25 wherein said laser diode is arranged between said first terminal and said second terminal, and said heater and said inductor serially connected to each

other are arranged between said second terminal and said third terminal, and
 wherein said driving signal is provided to said second terminal and said
 supply current is provided from said third terminal.

5 5. A semiconductor laser module, comprising:

(a) an optical assembly including

a laser diode for emitting light within a predetermined wavelength range
 at a temperature by providing a driving signal thereto,

a temperature sensor for sensing the temperature of said laser diode,

10 a heater for simulating a self-heating of said laser diode by providing a
 supply current, and

a thermoelectric cooler for controlling said temperature of said laser diode,
 said thermoelectric cooler mounting said semiconductor laser diode, said
 temperature sensor and said heater thereon; and

15 (b) a controller including

a window comparator for comparing said temperature of said laser diode
 sensed by said temperature sensor and a predetermined range, said comparator
 outputting a switching signal when said temperature of said laser diode falls
 within said predetermined range, and

20 a first switch connected to said heater, said switch having a normally close
 configuration and turning off by receiving said switching signal from said window
 comparator, thereby shutting off said supply current to said heater.

25 6. The semiconductor laser module according to claim 5, wherein said
 driving signal includes a bias current and a modulation current, and said
 semiconductor laser module further comprises a second switch and a third switch,

said second switch turns on and supplies said bias current to said laser diode by receiving said switching signal, and said third switch turns on and supplies said modulation current to said laser diode by receiving said switching signal.

5 7. The semiconductor laser module according to claim 5, further comprises a memory means for preserving said predetermined range in a digital form.

8. The semiconductor laser module according to claim 5, further comprises a digital to analog converter,

10 wherein said digital to analog converter converts said predetermined range stored in said memory means in said digital form to an analog form, and outputs converted predetermined value to said window comparator.

9. The semiconductor laser module according to claim 7, further comprises
15 a driver for driving said thermoelectric cooler and a differential amplifier,

wherein said differential amplifier compares said temperature of said laser diode sensed by said temperature sensor and a predetermined temperature, and outputs a signal for driving said thermoelectric cooler, so that a feedback control for stabilizing said temperature of said laser diode is achieved.

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10. The semiconductor laser module according to claim 6, further comprises a laser diode driver for driving said laser diode,

wherein said laser diode driver receives said bias current and said modulation current and outputs said driving signal to said laser diode.

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11. A method for thermally stabilizing an optical assembly including a

semiconductor laser diode for emitting light within a predetermined wavelength range at a temperature by providing a driving signal thereto, a temperature sensor for sensing said temperature of said laser diode, a heater and a thermoelectric cooler for controlling said temperature of said laser diode and mounting said laser diode, said temperature sensor and said heater thereon, said method comprising steps of:

(a) providing a supply current to said heater for simulating a self-heating of said laser diode;

(b) shutting off said supply current after said temperature of said laser diode falls within a predetermined range;

(c) providing said driving signal to said laser diode.